

WHAT IS CLAIMED IS:

1. An apparatus for arranging music score displaying data for displaying a music score on a given music score display area in one or more staff tiers, each tier containing one or more measures of variable lengths as justified for the display area, said apparatus comprising:
  - a music performance representing data input device which inputs data representing a music performance in a plurality of measures of music progression;
  - a musical score notational element determining device which determines music score notational elements necessary for displaying a music score for each of said measures based on said music performance representing data;
  - a display size determining device which determines display sizes of said music score notational elements to be displayed on said display area;
  - a horizontal length determining device which determines a horizontal length of the music score to be displayed on said display area;
  - a measures apportioning device which calculates, for each of said measures based on said determined display sizes, a minimum horizontal length for placing in the measure at least one kind of said music score notational elements without an overlap in a horizontal direction among said music score notational elements as determined to be displayed for each of said measures, and apportions said measures for each of said staff tiers based on said calculated minimum horizontal length of each of said measures and said determined horizontal length of the music score to be displayed such that the music score notational elements of each of said measures shall be placed on the apportioned staff tier in a length of said minimum horizontal length or more, measure by measure; and
  - a music score display data output device which outputs music score display data for displaying said music score notational elements on said staff tiers according to the apportionment of the measures by said measures apportioning device.

2. An apparatus as claimed in claim 1, wherein said music score notational elements are of at least one kind selected from clefs, bar lines, key signatures, time signatures, notes, rests, dynamic marks, repeat signs and staff lines.

3. An apparatus as claimed in claim 1, wherein said display size determining device includes controls to be operated by a user for determining the display sizes of said music score notational elements.

4. An apparatus as claimed in claim 1, wherein the music score is to be displayed in tiers of musical staves on a page or pages, each page having said music score display area, said apparatus further comprising:

a vertical length determining device which determines a vertical length of the music score to be displayed on said display area; and

a staff tiers apportioning device which calculates, for each of said staff tiers based on said determined display sizes, a maximum vertical length for placing all the music score notational elements in the measures apportioned for the staff tier by said measures apportioning device, and apportions said staff tiers for said page based on said calculated maximum vertical length of each of said staff tiers and said determined vertical length of the music score to be displayed such that a number of staff tiers shall be placed within said music score display area on the page;

wherein said music score display data output device outputs music score display data for displaying the music score for the page by placing the music score notational elements in the staff tiers for which the measures are apportioned by said measures apportioning device according to the apportionment of the staff tiers as apportioned by said staff tiers apportioning device.

5. An apparatus as claimed in claim 4, wherein said staff tiers apportioning device calculates said maximum vertical length by calculating the highest position of an notational element and the lowest position of an notational element among said notational elements to be placed in each of said staff tiers.

6. An apparatus for arranging music score displaying data for displaying a music score having measures of music progression on a display device, said apparatus comprising:

a music performance representing data input device which inputs data representing a music performance in a plurality of measures of music progression;

a display size determining device which determines display sizes of music score notational elements with respect to the measures to be displayed on said display device based on said music performance representing data;

a measures length calculating device which calculates, for each of said measures based on said determined display sizes of the music score notational elements, a horizontal length of the measure for placing in the measure at least one kind of said music score notational elements without an overlap in a horizontal direction among said music score notational elements; and

a music score display data output device which outputs music score display data for displaying said music score notational elements in said measures according to said determined display sizes of the music score notational elements and said calculated horizontal lengths of the measures.

7. An apparatus as claimed in claim 6, further comprising:

a display adjusting device which adjusts said music score display data such that a music score is displayed in a plurality of staff tiers on said display device on a page-by-page basis, apportions the measures among said staff tiers such that a single measure shall not extend over two staff tiers, and apportions said music score notational elements to be placed in a uniform distribution through the staff tier with respect to the music progression.

8. An apparatus as claimed in claim 6, wherein said music score notational elements are of at least one kind selected from clefs, bar lines, key signatures, time signatures, notes, rests, dynamic marks, repeat signs and staff lines.

9. A computer program containing program instructions executable by a computer for arranging music score displaying data for displaying a music score on a given music score display area in one or more staff tiers, each tier containing one or more measures of variable lengths as justified for the display area, and causing said computer to execute:

a music performance representing data input step of inputting data representing a music performance in a plurality of measures of music progression;

a musical score notational element determining step of determining music score notational elements necessary for displaying a music score for each of said measures based on said music performance representing data;

a display size determining step of determining display sizes of said music score notational elements to be displayed on said display area;

a horizontal length determining step of determining a horizontal length of the music score to be displayed on said display area;

a measures apportioning step of calculating, for each of said measures based on said determined display sizes, a minimum horizontal length for placing in the measure at least one kind of said music score notational elements without an overlap in a horizontal direction among said music score notational elements as determined to be displayed for each of said measures, and apportioning said measures for each of said staff tiers based on said calculated minimum horizontal length of each of said measures and said determined horizontal length of the music score to be displayed such that the music score notational elements of each of said measures shall be placed on the apportioned staff tier in a length of said minimum horizontal length or more, measure by measure; and

a music score display data output step of outputting music score display data for displaying said music score notational elements on said staff tiers according to the apportionment of the measures by said measures apportioning step.

10. A computer program containing program instructions executable by a computer for arranging music score displaying data for displaying a music score having measures of music progression on a display device, and causing said computer to execute:

a music performance representing data input step of inputting data representing a music performance in a plurality of measures of music progression;

a display size determining step of determining display sizes of music score notational elements with respect to the measures to be displayed on said display device based on said music performance representing data;

a measures length calculating step of calculating, for each of said measures based on said determined display sizes of the music score notational elements, a horizontal length of the measure for placing in the measure at least one kind of said music score notational elements without an overlap in a horizontal direction among said music score notational elements; and

a music score display data output step of outputting music score display data for displaying said music score notational elements in said measures according to said determined display sizes of the music score notational elements and said calculated horizontal lengths of the measures.